UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte JACKSON L. ELLIS, DAVID R. NOELDNER, DAVID M. SPRINGBERG and GRAEME M. WESTON-LEWIS

Appeal No. 2006-1783
Application No. 09/183,694[1]

ON BRIEF

Before BARRY, BLANKENSHIP, and SAADAT, Administrative Patent Judges.

SAADAT, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal under 35 U.S.C. § 134(a) from the Examiner's final rejection of claims 1-17, which constitute all of the claims pending in this application.

We affirm-in-part.

BACKGROUND

Appellants' invention is directed to a data controller which includes a command queuing engine for creating a plurality of

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[1] Application for patent filed October 30, 1998.

threads of sequential commands that exist simultaneously. An understanding of the invention can be derived from a reading of exemplary independent claims 3, 21 and 26 which are reproduced as follows:

3. A data controller, that is couplable to a host and coupled to a storage medium, microprocessor, local storage and a buffer memory, comprising a command queuing engine that creates a plurality of threads of sequential commands that exist simultaneously while minimizing interrupts associated to the commands.

21. A data controller of a peripheral device having a storage medium and a processor, wherein the data controller minimizes interrupts to the processor by re-ordering a plurality of commands received from a host computer from an order of arrival into an order of sequence in the storage medium.

26. A peripheral device that includes a data controller, a microprocessor, a buffer memory, local memory and a storage medium, and that is couplable to a host, wherein the data controller creates threads of a plurality of commands and generates interrupts at the beginning and end of the plurality of commands relative to a data transfer.

The Examiner relies on the following references in rejecting the claims:

Bean et al. (Bean)	4,543,626	Sep. 24, 1985
Jones et al. (Jones)	5,483,641	Jan. 9, 1996
Krakirian	5,781,803	Jul. 14, 1998

Claims 21, 22 and 26 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Krakirian.

Claims 23-25 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Krakirian and Bean.

Claim 3 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Krakirian and Jones.

Claims 16-20 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Krakirian, Jones and Bean.

We make reference to the brief (filed October 29, 2002), the reply brief (filed May 23, 2003), the supplemental reply brief (filed July 18, 2005), the answer (mailed April 18, 2003) and the supplemental answer (mailed May 20, 2005) for the respective positions of Appellants and the Examiner.

OPINION

In rejecting claims 21, 22 and 26, the Examiner takes the position that claim 21 does not require any reordering done by either a data controller or a processor and merely requires the function of reordering (answer, page 8; suppl. answer, page 9). The Examiner further asserts that the reordering in Krakirian is done in the CFIFO 217 which is a part of the disk controller IC 204 (suppl. answer, page 9). Appellants argue that the CFIFO 217 of Krakirian is an array of registers which is not understood by the ordinary skilled artisan to be able to minimize interrupts to a processor by reordering commands (suppl. reply brief, page 3).

A rejection for anticipation under section 102 requires that each and every limitation of the claimed invention be disclosed in a single prior art reference. See Atlas Powder Co. v. IRECO Inc., 190 F.3d 1342, 1347, 51 USPQ2d 1943, 1947 (Fed. Cir. 1999); In re Paulsen, 30 F.3d 1475, 1478-79, 31 USPQ2d 1671, 1673 (Fed. Cir. 1994). Rejections based on § 102 must rest on a factual basis wherein the burden of proof is placed "on the Patent Office which requires it to produce the factual basis for its rejection of an application under sections 102 and 103." In re Piasecki, 745 F.2d 1468, 1472, 223 USPQ 785, 787-88 (Fed. Cir. 1984) (citing In re Warner, 379 F.2d 1011, 1016, 154 USPQ 173, 177 (CCPA 1967)). The examiner may not, because of doubt that the invention is patentable, resort to speculation, unfounded assumption or hindsight reconstruction to supply deficiencies in the factual basis for the rejection. See In re Warner, 379 F.2d at 1017, 154 USPQ at 178 (CCPA 1967).

Before addressing the Examiner's position and Appellants' rebuttal, it is an essential prerequisite that the claimed subject matter be fully understood. The claim construction analysis begins with the words of the claim. See Vitronics Corp. v. Conceptronic, Inc., 90 F.3d 1576, 1582, 39 USPQ2d, 1573, 1576 (Fed. Cir. 1996). As we direct our attention to Appellants'

claim 21 in order to derive an understanding of the scope and content thereof, we note that the claim requires that the data controller minimize the interrupts to the processor. The claim also requires that the data controller does so by re-ordering the commands from an order of arrival into an order of sequence in the storage medium. Therefore, contrary to the Examiner's position, not only the function of "re-ordering" is claimed, but it is also recited that the data controller performs such function.

Upon a review of Krakirian, we remain unconvinced by the Examiner that CFIFO 217 of Krakirian is the same as the claimed data controller or performs the re-ordering of commands. The control first-in-first-out (CFIFO) of Krakirian is an array of registers (col. 7, lines 57-62) which may receive data or commands (col. 12, lines 35-43). Although the commands may be reordered, queued and identified with queue tags (col. 15, lines 18-29) while the microprocessor receives interrupts (col. 15, lines 34-37), no minimization of interrupts by reordering of arrivals to an order of sequence in the storage medium, as recited in claim 21, is described in Krakirian.

Regarding claim 26, Appellants argue that Krakirian discloses a single command which cannot result in creating

multiple threads of a plurality of commands (suppl. reply brief, page 4). The Examiner is of the opinion that claim 26 does not require that plural threads be queued simultaneously (answer, page 10). The Examiner also states that although Krakirian discusses creation of a single thread of a plurality of commands, it is implied that additional threads of a plurality of commands will be created later (answer, page 9).

We agree with the Examiner that claim 26 does not require that threads of a plurality of commands be created simultaneously. In other words, as specified by the Examiner (answer, page 4), the threads may be sequential with the microprocessor interrupts occurring (col. 4, lines 4-43) at the beginning and the end of the plurality of commands (col. 17, lines 40-63). Therefore, the creation of threads for each set of commands, although may occur at different times, reads on the subject matter recited in claim 26.

In view of our analysis of the prior art reference, we find that Krakirian discloses all the limitations of claim 26, but not of claim 21. Therefore, we sustain the 35 U.S.C. § 102 rejection

of claim 26 but not of claim 21 and claim 22, dependent thereon, over Krakirian.[2]

Turning now to the rejection of claim 3, we initially note that unlike claim 26, claim 3 requires that the plurality of threads of sequential commands exist simultaneously. The Examiner relied on Jones for simultaneously creating a plurality of threads of commands and concludes that it would have been obvious to combine the teachings of Jones with Krakirian in order to increase reliability (answer, page 5; suppl. answer, page 11). However, we agree with Appellants (reply brief, page 5; suppl. reply brief, page 5) that the stated reason for combining the references is not based on any teachings from the references that would have motivated one of ordinary skill in the art to carry out the multi-thread processing in Krakirian. A broad conclusory statement regarding the obviousness of modifying a reference, standing alone, is not "evidence." Thus, when an examiner relies on general knowledge to negate patentability, that knowledge must be articulated and placed on the record. See In re Lee, 277 F.3d 1338, 1342-45, 61 USPQ2d 1430, 1433-35 (Fed. Cir. 2002). Here,

[2] We also observe that claim 26 could be further considered for being unpatentable under 35 U.S.C. § 112, second paragraph as being vague. The claim recites creating "threads of a plurality of commands" while the interrupts are recited as being "at the beginning and end of the plurality of commands." It is not clear whether the interrupts occur at the beginning and end of each thread or at the beginning and end of all of the commands.

as stated by Appellants supra, there is no evidence of benefits to Krakirian from its combination with Jones since the single thread of Krakirian already has minimal interruption by having one at the beginning and the other after the completion of the command (abstract).

Additionally, we remain persuaded by Appellants' arguments (brief, pages 12-14) that the portions of Jones (col. 6, lines 10-21; col. 50, lines 50-60; col. 53, lines 1-63) relied on by the Examiner describe combining multiple requests into a single request and not necessarily creating a plurality of threads that exist simultaneously. While Jones may have the capability of processing multiple threads, the Examiner has not pointed to any part of the reference that would have suggested the existence of a plurality of threads simultaneously in combination with the disk controller of Krakirian to minimize interrupts associated with the commands. Accordingly, based on the weight of the evidence and the arguments presented by the Examiner and Appellants, we are constrained to reverse the Examiner's decision and not sustain the 35 U.S.C. § 103 rejection of claim 3 over the combination of Krakirian and Jones.

With respect to the rejection of the remaining claims, we note that the Examiner further relies on Bean for the additional

features recited in these dependent claims. However, the Examiner has not pointed to any convincing rationale in modifying Krakirian or the combination of Krakirian and Jones with the teachings of Bean that would have overcome the deficiencies of the applied prior art as discussed above with respect to claims 3 and 21. Accordingly, we do not sustain the 35 U.S.C. § 103 rejection of claims 23-25 over Krakirian in combination with Bean, nor of claims 16-20 over Krakirian and Jones in combination with Bean.

CONCLUSION

In view of the foregoing, the decision of the Examiner rejecting claims 21 and 22 under 35 U.S.C. § 102 and rejecting claims 3, 16-20 and 23-25 under 35 U.S.C. § 103 is reversed, but is affirmed with respect to the rejection of claim 26 under 35 U.S.C. § 102.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a)(1)(iv).

AFFIRMED-IN-PART

LEONARD LANCE BARRY)
Administrative Patent Judge)
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HOWARD B. BLANKENSHIP) BOARD OF PATENT
Administrative Patent Judge) APPEALS
) AND
) INTERFERENCES
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)
MAHSHID D. SAADAT)
Administrative Patent Judge)

LSI Logic Corporation
1621 Barber Lane
MS: D-106
Milpitas, CA 95035

MDS/eld